

Annotated List of the Metallic Wood-boring Beetles (Insecta: Coleoptera: Buprestidae) of the George Washington Memorial Parkway, Fairfax County, Virginia

Brent W. Steury

U.S. National Park Service
700 George Washington Memorial Parkway
Turkey Run Park Headquarters
McLean, Virginia 22101

Ted C. MacRae

Monsanto Company
700 Chesterfield Parkway West
Chesterfield, Missouri 63017

Erik T. Oberg

U.S. National Park Service
700 George Washington Memorial Parkway
Turkey Run Park Headquarters
McLean, Virginia 22101

ABSTRACT

Twenty-three species in nine genera of metallic wood-boring beetles (Coleoptera: Buprestidae) are documented from a national park site in Fairfax County, Virginia. *Paragrilus tenuis* (LeConte) and *Pachyschelus purpureus* (Say) are reported for the first time from Virginia.

Key words: Buprestidae, George Washington Memorial Parkway, National Park, new state record, *Pachyschelus purpureus*, *Paragrilus tenuis*, Virginia.

INTRODUCTION

As early as the mid-1800s North American entomologists were attracted to the family of beetles commonly known as the metallic wood-borers (Coleoptera: Buprestidae) (LeConte, 1860), undoubtedly due to the alluring nature of their glossy, metallic, iridescent colors and distinctive, often jewel-like, form. These hard-bodied beetles can be recognized by a combination of features including serrate antennae, down turned (hypognathous) head, dextro-sinistral metasternal suture, and basally connate abdominal sterna. Most adults feed on leaves, flowers and pollen,

but species of *Agrilus* and *Chrysobothris* occasionally feed on the spores of fungi. Usually, eggs are inserted into cracks and crevices of wood, or for leaf-miners, deposited on the surface of the leaf and covered with a sticky substance that hardens into a protective cap. Larvae feed while burrowing through dead wood or cambium layers or while mining leaves and stems of herbaceous or woody plants (Bellamy & Nelson, 2002).

Compared to most other beetle families, the distribution of North American buprestids is fairly well known (Nelson, 1975; Nelson & Westcott, 1976; Bellamy, 1982; Nelson et al., 1982; Walters & Bellamy, 1982; Nelson, 1987; MacRae, 1990; Nelson & Nelson

et al., 1996; MacRae & Nelson, 2003; MacRae, 2006; Nelson et al., 2008). Despite the popularity of Buprestidae, recent surveys in a national park (George Washington Memorial Parkway) in northern Virginia, and examinations of local collections, have revealed two species previously unreported from the Commonwealth. We include those species, *Paragrilus tenuis* (LeConte) and *Pachyschelus purpureus purpureus* (Say), along with an annotated list of twenty-one other buprestids documented from the park.

STUDY SITES

Inventories were conducted on lands managed by the National Park Service as units of the George Washington Memorial Parkway (GWMP) at Great Falls Park, Turkey Run Park, Dyke Marsh Wildlife Refuge, and Little Hunting Creek, Fairfax County, Virginia, an area covering approximately 850 ha. Great Falls and Turkey Run parks lie in the Piedmont physiographic province while Dyke Marsh and Little Hunting Creek are situated on the Coastal Plain. Most of the study sites are dominated by maturing, second growth, deciduous woodlands, but more open, herbaceous dominated habitats can be found in narrow bands along the Potomac River and at Dyke Marsh. The vascular flora of the GWMP is diverse, with 1313 taxa recorded, 1020 from Great Falls Park alone (Steury et al., 2008; Steury, 2011).

METHODS

The number of buprestid species documented from the GWMP has grown since the first park records for this family, accounting for five species, were published based on surveys conducted on 23–25 June 2006 as part of the Potomac Gorge Bioblitz (Evans et al., 2008). Inventories conducted subsequent and prior to the Bioblitz survey have added buprestid specimens to the collections from GWMP, primarily as by-catch from studies targeting other arthropods that employed the following methods: 1) pan traps (blue, white, and yellow) to inventory bees at Great Falls Park in 2007 and 2008 (Steury et al., 2009); 2) Malaise traps ($n = 6$) operated at Great Falls and Turkey Run parks from 2006 through 2008 (Flint, 2011); 3) hand picking, pitfall, Lindgren funnel, and black light traps set at Great Falls Park, Turkey Run Park, Dyke Marsh Wildlife Refuge, and along Little Hunting Creek in 2010 and 2011; and 4) pit fall or Malaise traps operated at Dyke Marsh from 1998 through 2003 (Kjar & Barrows, 2004). To determine new Virginia records we reviewed published literature, the distribution database of Ted C. MacRae, and conducted searches of

collections at the Virginia Museum of Natural History, Martinsville, Virginia (VMNH), National Museum of Natural History, Smithsonian Institution, Washington, DC (NMNH), George Washington Memorial Parkway (GWMP), and the private collections of Arthur V. Evans, Richmond, Virginia (AVEC) and Ted C. MacRae, Chesterfield, Missouri.

RESULTS AND DISCUSSION

Twenty-three taxa in nine genera were documented from the park. *Paragrilus tenuis* (LeConte) and *Pachyschelus purpureus purpureus* (Say) are reported for the first time from Virginia. The only methods which proved successful in capturing buprestids were Malaise traps (20 species), hand netting (6), and pan traps (3). Sixteen buprestid species were captured at Great Falls Park, 12 at Dyke Marsh, and six at Turkey Run Park. The Little Hunting Creek area, where only Lindgren funnel and pitfall traps were set, failed to capture any buprestids.

Paragrilus is represented by four species north of Mexico, with only *P. tenuis* (LeConte), known from the eastern United States (Hespenheide, 2002). Its maximum length is 5.5 mm and, as in all *Paragrilus*, the antennae are received in grooves. The host plants of larval and adult *P. tenuis* have been reported as *Hibiscus moscheutos* L. (Weiss & Dickerson, 1919; Hespenheide, 2002) including ssp. *lasiocarpus* (Cav.) O. J. Blanchard (Nelson, 1987; MacRae, 1991; MacRae, 2006). *Hibiscus laevis* All. is a reported host only in adults (MacRae, 2006). *Hibiscus moscheutos* ssp. *moscheutos* is a common plant in Dyke Marsh where *P. tenuis* was collected. The reported distribution of *P. tenuis* is Georgia (Franklin & Lund 1956), Delaware, Pennsylvania, Maryland, New Jersey, and New York (Nelson 1987), Florida, Illinois, Mississippi, and North Carolina (Nelson & MacRae 1990), Missouri (MacRae 1991) and the District of Columbia (Downie & Arnett, 1996). We add Virginia to the known distribution of *P. tenuis* based on the following specimens: **Arlington Co.:** 15 June 1903, Shoemaker (NMNH, 1). **Charles City Co.:** VCU Rice Center wetland, 1 May–17 June 2010, Evans (AVEC, 7). **Fairfax Co.:** Black Pond reared on *Hibiscus*, 25 May 1919, Craighead (NMNH, 5); Black Pond, 19 June 1919, Middleton (NMNH, 1); Black Pond, 17 June 1920, Fisher (NMNH, 11); Great Falls, 16 June 1919, Middleton (NMNH, 1); Dyke Marsh, 24 June–19 July 1998, Barrows (GWMP, 2). **Nelson Co.:** 29 July 1910, Robinson (NMNH, 1).

The *Pachyschelus* fauna of America north of Mexico includes eight species and one additional subspecies (Hespenheide, 2003). North American

Pachyschelus rarely exceed 3 mm in length and have a large, triangular scutellum giving them an obovate periphery. *Pachyschelus purpureus* is the only eastern North American species with white pubescence on the elytra. The pubescence occurs in a diagonal or subtransverse line just before the apices. The elytra of the nominate subspecies are predominately dark blue and those of subspecies *P. p. uvaldei* Knull are reddish-purple. The larvae of *P. p. purpureus* are leaf miners of *Geranium* (Hespenheide, 2003). Two species, *Geranium carolinianum* L. and *G. maculatum* L., have been documented from the collection site at Great Falls Park, with *G. maculatum* being the more commonly observed species (Steury et al., 2008). MacRae (1991) found *P. p. purpureus* leaf mining *G. maculatum* in Missouri. The reported North American distribution of *P. purpureus* is Oklahoma (Nelson, 1987), Missouri (MacRae, 1991), Alberta, Ontario, Alabama, Illinois, Indiana, Iowa, New Jersey, New York, Ohio, and Texas (Downie & Arnett, 1996), and Arizona, Connecticut, District of Columbia, Illinois, Indiana, Iowa, Massachusetts, Michigan, New Mexico, North Carolina, Pennsylvania, Rhode Island, Tennessee, and Wisconsin (Hespenheide, 2003).

We add Virginia to the known distribution of *P. p. purpureus* based on the following specimens: **Arlington Co.:** Glencarlyn, 1 May 1910, Knab (NMNH, 4); Glencarlyn, 18 June 1912, Shoemaker (NMHN, 1); Glencarlyn, June 1925, Bridwell (NMNH, 1). **Fairfax Co.:** 25 June 1911, s.n. (NMNH, 2); 20 June 1912, s.n. (NMNH, 1); Great Falls Park, 1-20 May 2009, Steury (GWMP, 1).

LIST OF SPECIES

Nomenclature follows Nelson et al. (2008). Taxa are listed alphabetically. The number of specimens in the GWMP collection is given in parentheses followed by the collection site acronyms: Dyke Marsh Wildlife Preserve (DM), Great Falls Park (GF), and Turkey Run Park (TR). Methods of collection are given as hand netted (hn), Malaise trap (mt), or pan trap (pt). The early and late dates of collection are given (including the entire length of a trap set).

Acmaeodera pulchella (Herbst)–(1); GF; pt; 30 Jun

Acmaeodera tubulus (Fabricius)–(9); GF; pt; 9 Apr-23 May

Agrilus bilineatus (Weber)–(10); DM, GF; hn, mt; 21 May-13 Jul

Agrilus cephalicus LeConte –(2); DM; mt; 10-28 May

Agrilus lecontei lecontei Saunders–(3); DM, GF, TR; mt; 19 Jun-2 Jul

Agrilus obsoletoguttatus Gory–(8); DM, GF, TR; hn, mt; 19 Jun-21 Jul

Agrilus paracelti Knull–(2); GF; mt; 1 May-30 Jun

Agrilus sp. (*otiosus* group)–(1♀); TR; mt; 19-30 Jun

Agrilus ruficollis (Fabricius)–(2); GF; hn; 19-30 Jun

Agrilus subcinctus Gory–(1); DM; mt, 6-14 Jun

Anthaxia (*Haplanthaxia*) *viridifrons* Gory–(2); DM, TR; hn, mt; 20 Jun-2 Jul

Brachys aerosus Melsheimer–(1); GF; mt; 30 Jun-13 Jul

Buprestis (*Knelliobuprestis*) *rufipes* (Oliver)–(2); DM, TR; hn, mt; 24 Jun-8 Oct

Chrysobothris azurea LeConte–(2), GF; mt; 19-30 Jun

Chrysobothris sexsignata (Say)–(3); DM, GF; mt; 20 Jun-13 Jul

Chrysobothris shawnee Wellso & Manley–(2); DM, GF; mt; 6 Jun-26 Jul

Chrysobothris viridiceps Melsheimer–(2); DM, GF; mt; 14 Jun-26 Jul

Dicerca obscura (Fabricius)–(1); DM; mt; 17-28 May

Pachyschelus laevigatus (Say)–(4); GF; hn, pt, mt; 24 Jun-17 Jul

Pachyschelus purpureus purpureus (Say) –(1); GF; mt; 1-20 May

Paragrilus tenuis (LeConte)–(2); DM; mt; 24 Jun-19 Jul

Taphrocerus nicolayi Obenberger–(17); GF, TR; mt; 30 Jun-21 Nov

Taphrocerus schaefferi Nicolay–(1); GF; mt; 10-30 April

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